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Improvement of Interstellar Material and Energy Flows

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ABSTRACT

Objectives: A novel approach is suggested to utilize the inherent forces of the universe for the benefit of mankind, by applying the model for Efficient Use of Resources for Optimal Production Economy (EUROPE) to improve the major flows of gas, dust, material and energy between stars and galaxies. This endeavour is regarded as promoting the altruism and benevolence by increasing life-forms' chances to survive. Methods: It is shown how the torus-shaped flows of gas, dust material and energy between stellar bodies in cosmos can be improved with the EUROPE model in order to preserve universe and secure its existence by allocating shadow costs to waste-like flows and unwanted radiation in this torus. The fewer shadow costs being allocated to the stellar residuals, the more efficient the cosmic torus flows, expressed in equivalents of antimatter released, by inducing incentives to improve the conditions for all inhabitants. Results: The methodology promotes the economy when travelling in space, advances the technology used and improves the environment, when outer space in the future is explored and exploited. A single key factor enables monitoring, managing and evaluating of the development of universe and the flows of gas, dust, material and energy between various stellar objects, such as the distant stars and whole galaxies. Conclusions: I recommend using the EUROPE model to monitor, manage and evaluate the wastes and spillages of all material and energy phenomena throughout the known universe, to uphold its very existence. Algorithms can be developed to facilitate the cosmic village.

Keywords: Universe; Torus; Interstellar flows; Tool; Incentives; Efficiency; Improvement.

INTRODUCTION

The universe is torus-shaped [1]. **Figure 1** shows the fundamental torus geometry of the universe [2]. Therein, gas, dust, matter, energy and star clusters constantly flow up on the inside, and down at the outside of the torus, and so on. This view is compatible with many mystics' belief in the revolving universe.

This paper shows how the EUROPE model, based on the equality principle [3-12] can be applied to the flows of universe, and between stellar bodies. The efficiency of these flows increases by allocating constructed, but useful, shadow costs to flow spillages and losses in the torus and between stellar bodies, such as the stars and galaxies. This approach enables monitoring, management and evaluation by a single key factor (*SC*) to simultaneously improve the cost-effectiveness, the technology used and the cosmic environment, plus the interstellar flows, throughout universe to improve all the life-forms' conditions.



Figure 1. The fundamental torus geometry of the universe [2].

Energy and material flow across the universe and are exchanged between star systems and whole galaxies, one illustrative example being the two galaxies NGC 3808 on the right and its companion NGC 3808A on the left in **Figure 2**. The stars, gas and dust that flow from NGC 3808, visualised in Figure 2, form an enveloping arm around NGC 3808A.

The bridge of shared matter between these two galaxies suggests that some stars and gas, drawn from the larger galaxy, have been caught in the gravitational pull of the smaller one. The natural shapes of both galaxies have been distorted by their gravitational interaction [13].

RESEARCH METHODS

This paper presents a methodology for how to improve the flow of the whole cosmic torus and its sub-flows of gas, dust, material and energy between star systems and galaxies. Shadow costs are employed to enhance the efficiency of these flows by allocating constructed, but useful, units



Figure 2. The two galaxies NGC 3808 (right) and NGC 3808A (left) [13].

of antimatter released to the unwanted flow residuals, that decrease the functionality of the beneficial flows throughout the universe. This method increases the quality of the torus.

The introduction presents the astronomic context and describes the scientific ambition of the author. Thereafter, the scientific foundation for the equality principle, that is applied to the interstellar flows in this paper, is outlined.

The equality principle and its mathematical expression: the EUROPE model, is hence applied to the universal torus and cosmic flow contexts to improve the flows of material and energy in universe. General business administration and economics theories are employed, in a modified way that is well adapted to various space phenomena.

After the description of the theory for application of the EUROPE model to universal issues, a Results and Discussion section is provided, and Suggestions for further research, are given. Finally, the features of the present study are summarised in the Conclusion, Benefits of the Study and Recommendations sections, followed by a review of the applied research ethics.

This paper does not exhibit any case study with real world facts and figures. This is due to the author's ambition to merely introduce a theoretical approach of possible usefulness, in a distant future, when we humans will possess sufficient resources to have a real impact on our cosmic surroundings and enjoy them for the long run benefit of our courageous species.

The main desire of the author is to provide a versatile tool to secure the very long run existence of cosmos and the free flow of light, and other sources of information, between star systems and galaxies, throughout the vast cosmos, by employing the equality principle for preserving it, provided that the necessary means and measures are at hand. When these times come, the methods are described here and wait to be frequently used at the higher organisational policy

levels throughout the entire known universe, forever and ever. This endeavour is regarded as increasing the benevolence and cosmic altruism, or its equivalents.

The scientific methodology chosen combines the study of: (i) what should be changed and how, and (ii) the development of theories and models, based on the accumulation of knowledge presented in, in this case, a scientific paper. The main delimitation of the launched theory is its lack of specific sub-targets in space to be optimised or reduced. Quantitative mathematics is applied. The approach outlined by Equations [1-5] is mainly analytical. However, the research is more humanistic holistic than, for example, positivistic. Recent and reliable data were obtained from the public internet sources. No agreements or payments were made.

Personal computers were used. Thus, no direct intervention with human activities took place. The validity of the developed methods is granted by the employment of commonly accepted theory of economics, such as business administration, in a modified way that is based on scientific results and the long experience of its practical usage. The reliability is ensured by consulting relevant standard works, and the many peer-reviewed papers in international, scientific journals that constitute a part of this article's references.

THE CONCEPT OF THE EQUALITY PRINCIPLE

Basic Framework of the Present Study

The equality principle denotes an ambition to, in financial terms, equalize regular products with residual products. This view is regarded as necessary to accomplish an upgrading of the wastes.

By doing so, a cleaner environment can usually be accomplished, which leads to higher profits in industry [14] and an improved technology. Also, the social conditions will improve due to improved citizens' health.

Theoretical Foundation of the EUROPE model

The model for Efficient Use of Resources for Optimal Production Economy, the EUROPE model, constitutes the mathematical expression of the equality principle. See Equation (1). A proportionality factor (*PF*) is calculated, to be multiplied by the total costs (*TC*) to obtain a constructed, but useful, shadow cost (*SC*) that is inserted into the accounting systems and budgets of the organisation in question, to give incentives to improve the prevailing conditions. Weights (*W*) allow management to consider the demands from public agencies, as well as taking their own preferences into account. Shadow costs, or shadow prices, are commonly defined as: A price for a resource, good, or service which is not based on actual market exchanges but is mathematically derived from indirect data [15].

The EUROPE model hence creates economic incentives to improve the economy, nature, technology and the living conditions. Thus, the equality principle is an economic instrument.

$$SC = PF * TC * W = (A / (B + C)) * TC * W \quad (1)$$

where

SC represents the fictive shadow cost to *additionally* allocate to organisations' economy
PF represents the proportionality factor, used for allocating a logical portion of *TC* to *A*

TC represents the total cost of the organisation, that is the total cost of the producing unit
A represents the residual to be minimised, or at least optimised and reduced (the bad)
B represents the total regular products from the producing unit in question (the goods)
C represents the total residuals from the producing entity in question (the total bads)
W represents the weight factor to consider public demands and/or managers' view on *A* during a certain period.

Unit: kg, litre, Joule, or currency.

APPLICATION OF THE EUROPE MODEL TO COSMIC FLOWS

General Theory for Preservation of a Universal Torus

Equation (2) is used to allocate the 'punishing' shadow costs, expressed as equivalents of antimatter released, to the unwanted spillages of a universal torus, to improve the long run efficiency of its flow.

$$SC\ torus\ =\ (A\ i\ /\ (B\ i\ +\ C\ i))\ *\ TC\ torus\ *\ W\ torus \tag{2}$$

where

SC torus represents the antimatter shadow cost to allocate to the universal budget
A i represents the waste fraction *i* to be reduced, such as unwanted gas flows or radiation
B i represents the total, benevolent flows of the universal torus, that is to be maintained
C i represents the total, unwanted flows that decrease the efficiency of the universal torus
TC torus represents the total loss if the cosmic torus breaks down, due to a loss of good flows
W torus represents the weight allocated by the universal management to the torus residual *A i* during a certain period, measured in a plausible way.

Unit: equivalent units of antimatter.

General Theory for Improvement of Cosmic Flows

Equation (3) is used to allocate the 'punishing' shadow costs, expressed as equivalents of antimatter released, to the unwanted spillages of the cosmic material and energy flows, to improve their long run efficiency.

$$SC\ flow\ =\ (A\ j\ /\ (B\ j\ +\ C\ j))\ *\ TC\ flow\ *\ W\ flow \tag{3}$$

where

SC flow represents the antimatter shadow cost to allocate to the cosmic flow budget
A j represents the waste fraction *j* to be reduced, such as unwanted gas flows or radiation
B j represents the total, benevolent flows between galaxies and star systems, to be maintained
C j represents the total, unwanted flows that decrease the efficiency of the cosmic flows
TC flow represents the total loss if the cosmic flows break down, due to a loss of good flows
W flow represents the weight allocated by the universal management to the flow residual *A j* during a certain period, measured in a plausible way.

Unit: equivalent units of antimatter.

Consequences of Application of the Theory to Cosmic Flows

The implementation of Equations (2) and (3) promotes the preservation of universe by making its flows function more efficient. This ambition facilitates the long run wellbeing of all the cosmic inhabitants, throughout the known universe.

Application of the Theory to Multiple Universes

In case of *m* parallel universes to be improved, Equation (4) can be applied to all their tori.

$$SC\ multiple\ tori\ = \sum_{i\ =\ 1}^{m} SC\ torus\ i \tag{4}$$

Application of the Theory to Multiple Flows

In case of *n* connected flows to be improved, Equation (5) can be applied to all these flows.

$$SC\ multiple\ flows\ = \sum_{j\ =\ 1}^{n} SC\ flow\ j \tag{5}$$

Principle for Allocation of Shadow Costs to Universal Budgets

The shadow costs: *SC torus, SC flow, SC multiple tori* and/or *SC multiple flows* are inserted into the budgets, or the profit and loss accounts, of the administrative unit in question. See **Table 1**.

This creates an economic incentive to reduce the various losses and spillages of the cosmic flows, that are to be improved by implementation of the EUROPE model. The geographical scale can be a twin star system, the Milky Way, or the local galaxy cluster, exhibiting flows of material, and energy, all the way up to the entire torus-shaped universe, to be improved as regards the quality of its inherent flows of gas, material substances, energy, and many types of radiation.

The general principle is that the fewer shadow costs that occur, the better will the cosmic flow function, and vice versa. The quality of the universal management's efforts can hence be evaluated over time, since the development of the shadow costs mirrors the changes in efficiency of the management's ambitions to improve the various flows in the universal torus, and between the stellar bodies.

Thus, the authorities at the higher policy analysis organisational levels, throughout cosmos, obtain a versatile tool: the key factor *SC*, to simultaneously monitor, manage and evaluate the development of the various flows of gas, material, and energy, in the entire, cosmic torus. The paramount goal would be to preserve cosmos and protect it from decay.

Table 1. The schematic public finances of, for example, the Milky Way, after [16].

REVENUES
EXPENDITURES
Expenditures on goods and services
Transfer payments
Debt interest
SC torus, SC flow, SC multiple tori and/or SC multiple flows
RESULT

RESULTS AND DISCUSSION

The theoretical findings point at the possibility to apply the equality principle to both cosmic and earthly flows. The reason for this is that its mathematical expression: the EUROPE model, is applicable to all 'black box' systems exhibiting an input, an output and a residual fraction. Therefore, such flows can be optimised, or at least improved, by using the EUROPE model in this constructive way.

Thereby, the EUROPE model takes into consideration common aspects of space policy, because the EUROPE model uses currency to express factors relevant to the management of the cosmic businesses. To the best of my knowledge, no other approaches that concurrently reduce the negative impact of stellar wastes on the universal torus and improve the federal authorities' economy by employing a single key factor, exist in the literature. Therefore, the launched approach is novel, promising and of path breaking character. Thus, my own work potentially contributes to a substantial upswing in the space travelling sector, which will obtain better finances for its corporate and public actors. Furthermore, my altruistic effort will increase the possibilities of the public's enjoying astronomic sceneries of high aesthetic value.

The flows of gas, dust, material and energy between different bodies in universe are possible to view as a 'black box' system, it just depends on where the system-border is drawn. In the case of a flow between two stars or between different galaxies, the system limit consists of these stars and galaxies, respectively. When studying how to improve the cosmic torus, the limit is set just outside the borders of the known universe, etcetera. As a matter of fact, the system limit can be set around different, parallel universes, when improving the cosmic flows in a multitude of worlds, that probably exist according to the scientific findings by advanced mathematicians.

The potential of this work hence seems to be endless, in strictly geographical terms. The advantages for all the living creatures throughout universe can be regarded as immeasurable, since the proposed model will increase the probability for all forms of life in cosmos to survive, in the very long run.

The author hopes that his findings will constitute the foundation for a possibly galactic, or even intergalactic, federation's endeavour to monitor, manage and evaluate their own space in cosmos. In doing so, the altruism, or its equivalent, throughout cosmos will be enhanced, due to an increased sense of belonging to a universal village, with room for everyone and everything showing love.

The major end users of the proposed approach would be as follows:

- Major deciding bodies such as possible galactic or intergalactic assemblies.
- Planetary governments that want a tool for project appraisal and evaluation.
- Overruling stellar authorities that want to implement life-promoting legislation.

SUGGESTIONS FOR FURTHER RESEARCH

The theoretical findings of the present work can constitute the basis for philosophical studies. Algorithms can be developed for how to apply the equality principle to a cosmic context, based on the classical, philosophic paradigms. Thereby, benevolent thoughts and attitudes could be facilitated to promote the realisation of a harmonious cosmic village.

CONCLUSION

The results show viability for improving the flows of gas, dust, material and energy:

- between stars and galaxies
- to preserve a universal torus
- in multiple universes, for multiple flows.

BENEFITS OF THE STUDY

The introduced methodology is beneficial in the following ways:

- It improves the interstellar flows between stars and galaxies in multiple universes.
- It provides a user-friendly tool for high, legislative assemblies throughout universe.
- It increases the probability for various forms of life to survive, while feeling happy.

RECOMMENDATIONS

Based on the author's analysis of his results, the following recommendations are made:

- Use the EUROPE model for studying the various flows of gas, dust, material and energy between different stellar bodies, before deciding to invest in major cosmic schemes, and when performing interstellar project appraisals of the profitability, sustainability and ethical viability.
- Use the EUROPE model to manage the wastes and unwanted spillages of all material and energy phenomena throughout the known universe, in order to uphold its existence.

COMPLIANCE WITH ETHICAL STANDARDS

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Disclosure of Potential Conflicts of Interest
The author declares no conflicts of interest.

Research Involving Human Participants and/or Animals
No human participants, or animals, were directly involved in this study.

Author's Contribution to the Present Study
J Stenis – Development of the concept, review of the literature, EUROPE model development, manuscript writing.

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